In 1968, once an adequate hardware input device was available in form of the UNISCOPE 300 CRT display it became possible to do transactional real time information processing.

In Feb. 1968, I prepared a document entitled “418 Report Processing System” which defined the concepts of general purpose Report Processing and the system methods for implementing such capabilities.

The software design was first implemented on the Univac 418 CRT-Report Processing system which was the beginning of Virtual Report Processing as provided by MAPPER Business Information Systems (BIS) systems.
Early in the development of the 418 CRT-RPS System, three individuals entered the picture who were of major importance to the evolution and promotion of Report Processing Services (RPS).

The first of these was William ‘Bill’ Gray. He became manager of the Diagnostic Software Development Group, which was also responsible for the 418 CRT-RPS project.

Jack Olgren, the top, senior programmer of the Diagnostic Program Development group initially declared that such a generalized, programmer-less method of using computers was not feasible. Based on prior experience, he believed that all applications had to be specifically coded. To his credit, upon further consideration, he conceded it might work. After reconsideration, he actually became the lead programmer for the Report Processing System project. His contributions to initial phases of system development were invaluable. Unfortunately, he died of a tragic motorcycle accident a year or so into the project.

Chuck Hanson also became a key programmer and system designer especially with later MAPPER 1100 and MAPPER C systems.
The year was 1968. I was assigned to a small team of programmers who were to develop a Test Reporting application. The Test Reporting application was relatively simple. It consisted of lists of equipment type numbers, serial numbers, status codes and related plan/actual dates of test start, test phases and completion. Basically the files consisted of columns of the test status data.

I understood the nature of the desired reporting pretty well because of my previous experience as a test technician and engineer. Instead of coding for this specific Test Status Reporting application, I conceived a generalized approach to information reporting and Report Processing. I wanted a way to computerize any reporting task without the specific programming having to be done for each different type of reporting.

In Feb. 1968, I prepared a document entitled “418 Report Processing System” which defined the concepts of general purpose Report Processing and the system methods for implementing such capabilities. It described the system hardware requirements and basic report processing functions.
A key to the “user friendly simplicity of the MAPPER language is the fact that intuitively obvious data and function parameters are submitted in the context of the user’s own data. When they design the data form they automatically create a function control language.
In the initial 418 CRT-Report Processing System, control of access to the reports in the database used Mode control a feature of the Uniscope 300 display terminals for security control. Besides a standard keyboard, these terminals also had a mode function keypad to the right of the keyboard. The meaning of the keys in this pad could changed with a plastic overlay that had a series of tabs along its upper edge. As the pattern of these tabs was set on a given overlay, tab sensors would detect the pattern and thereby define a particular Mode of control and definition of key meaning.

For the 418 CRT-RPS, these mode keys were used to define a group of types of reporting.
At this time, I was working in the Univac Commercial Division. In this division, Univac had established two main lines of computers; the 1100 line of main-frame computers and a 418 mid-frame line of computers that were especially effective as communications processors.

Univac had recently obtained major contracts to provide United and Eastern Airlines with computer systems to manage their reservation processing. Besides providing the control processors and networks, these contracts also required the first large-scale use of display terminals. These were Uniscope 300 CRT terminals.

The Univac 418 Computer was chosen to run this RPS application because of its communication system orientation.
The 418 CRT-RPS grew providing services to departments other than the original Test Department.

Also the system was adapted to use the newer Uniscope 100 terminals. It should be noted that the Uniscope 300 and 100 were dumb terminals providing only a display and keyboard.
Other Univac plants were connected by phone lines to the system so they could share the information and processing.
It should be noted that this System had much less processing power, memory and data storage than one of the powerful PC's available today.
It quickly became apparent that the concepts of report processing were popular with the users and demand for the services quickly accelerated. The need for a service Coordinator/Administrator/Teacher became apparent. I wrote the on-line Use Procedures and Guidelines contained in Report 1A and assumed the role of System Coordinator.

It was not long before a second Coordinator in the person of Lou Cramer was required. He became well known in the MAPPER world. He traveled much teaching the role of Coordination and promoting principles of User Driven report processing.
By 1974, the evolution of the 418 CRT-RPS service clearly represented a conflict of interest to the Information Systems and Control (IS&C) charter which was to provide all information processing for the corporation.

So, IS&C took the hardware, the software, the two coordinators and one of the 418 CRT-RPS programmers, Merlyn Zurn, and made them part of the Roseville IS&C Department.

Lou Cramer and I, as the 418 CRT-RPS system coordinators, felt clearly threatened by this take over by IS&C.
The Director of Production Control, Lewis Rydeen, was a very dynamic individual who demanded quick action and strict discipline from his staff in managing production.

This department ultimately became the largest user group in Univac Roseville operations and a prime example of User Designed Computing provided by the MAPPER system. They developed over 100 reporting applications in Production Control.

They were often called on to give Report Processing demonstrations to other users or visiting customers.
Use of Report Processing in the corporation suggested this kind of information processing had potential as a system software product.

A committee was formed to define the design specifications for a RPS 1100 software product. The design was to utilize the TPS and Data Base Management System (DBMS) 1100 system products.

The design committee for RPS 1100 proceeded to define a system that imposed the user interface of the 418 CRT-RPS and its Report Processing functionality over the standard 1100 TPS and DBMS product structures. This concerned me greatly because they refused to recognize our experience in meeting the demands of random access Report Processing as delivered by CRT-RPS. Of particular concern was the use of the conventional file record structures of the DBMS. The RPS 1100 designers would not recognize my concerns. They felt sure the powerful 1100 main frame and DBMS environments could easily deal with this Report Processing service.

I insisted on my concerns and ended my involvement with the project with a “White Paper” outlining my concerns and advice.

I left the 1100 RPS project and returned to my job as 418 CRT-RPS Coordinator and met with Bill Gray, the CRT-RPS Design Group Manager. I showed him my “RPS 1100 White Paper” and explained my concerns about the direction the RPS 1100 group was taking. I recommended that his group proceed to develop a version of Report Processing capabilities that would take advantage of our previous 418 CRT-RPS experience in the 1100 mainframe environment. He agreed and thus began the MAPPER project and a period of intense and politically dangerous competition between the two projects.
First MAPPER 1100 operations began in February of 1975 on an 1106 system in Final Test. By March, the service was stable and fully operational.

During the design of the initial MAPPER 1100 system software, the existing functionality of 418 CRT-RPS was duplicated. This consisted of these functionalities.

Chuck Hanson was responsible for creating the MAPPER acronym. He also was largely responsible for design of the internal architecture of 1100 MAPPER systems.

Note, the RBG and RPG capabilities provided the ability to create repeatable sequences of report processing functions.
The database was represented as electronic filing cabinets with reports stored in the drawers [types of reporting.] Users are familiar with this organization of data.

Users could switch between cabinets [Modes] if allowed and process the reports in the drawers [types of reporting.]

This also provide a very simple file naming system, 1b, 2b, etc.
As the MAPPER 1100 Report Processing service expanded and became available throughout the Univac Corporation, the possible appeal of the system as a marketable software product became obvious.

Corporate Headquarters supported RPS 1100 as the authorized Report Processing Software product. MAPPER 1100 was not to be offered to Univac customers. It was only to be used internally in the corporation. These corporate directions to marketing were clear and direct.

However the growing reputation and appeal of Report Processing concepts and the example provided by the rapidly expanding MAPPER 1100 service in the Univac plants continued to attract the more daring marketing branch personnel.
The Chicago salesman who finally broke the ice was Joseph (Joe) Bradway with the first sale of MAPPER 1100 to Santa Fe Railway.

The first commercial use of Sperry Univac's MAPPER was on the Santa Fe Railway in 1976.

By 1982, over 2,500 terminals were on-line tracking over 68,000 cars in over 175 rail yards. The system used two Sperry 1100/84 central multi-processors and had a total value of over $25 Million.

Initially the services used the RBG RPG capabilities to create the function sequences needed to create needed reporting. To improve efficiency, the RUN language was designed and used for application definition.

The Santa Fe sale was truly a breakthrough first sale. Joe Bradway, the Sperry Univac salesman for that account, was asked; how he could make such a sale when the head of Sperry Univac marketing had issued strict orders that the MAPPER 1100 system was not to be sold? He said he knew they would not turn down such a large order.

 Shortly after the Santa Fe sale, another sale of MAPPER 1100 was made to GTE Automatic Electric. The Univac Chicago marketing branch also made this sale.
By 1978 other 1100 main frame computer system sales based on MAPPER 1100 were also made to FTD Florists and Sergeant Lundy Engineering corporations and the Chicago Board of Education.

Those sales were also made in the Chicago area. The Sperry Univac branch in Kansas City saw the example of MAPPER 1100 as used in the Santa Fe computer center in Topeka, KS. This prompted another sale of MAPPER 1100 to Kansas City Power and Light. All of the systems to that time had been sold as Category III products not supported by the corporation.
These are a few of the manually executable 150 Report Processing Information Power Tools (functions) that were developed. These functions have more than + 750 Options that can be selected.
The Roseville MAPPER 1100 system became a valuable information resource for Sperry Corporation. This is a typical day of report processing activity on that system.
The MAPPER system in Roseville became a major information service for the corporation with a sizable real-time database.
In the mid 1980’s along with the industry concepts of 4th generation application development languages (4GLs) came the ideas of Open Systems and the common use of intelligent terminals and Personal Computers (PCs).

The idea of Open Systems meant that software could be written on one vendor’s hardware that could be used on other vendor’s equipment without modification.

One of the operating systems that had developed extensive use by different vendors was UNIX. This operating system was used on many different vendor’s systems. It was a very efficient operating system that used applications written in C Language.

Sperry also offered a group of UNIX based computer systems. The success of MAPPER with 1100 systems made it an obvious choice to be offered for use with UNIX systems. This was called U Series MAPPER or MAPPER C software systems.
MAPPER Systems History

MAPPER Marketing Golden Age
At the peak of the success of MAPPER marketing shortly after the merger of Sperry with Burroughs to form Unisys, the MAPPER system market looked like this:

<table>
<thead>
<tr>
<th>System Type</th>
<th>Count</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAPPER 1100 Systems</td>
<td>1,500</td>
<td>USA</td>
</tr>
<tr>
<td>MAPPER 1100 Systems</td>
<td>1,000</td>
<td>International</td>
</tr>
<tr>
<td>MAPPER 1100 Systems</td>
<td>500</td>
<td>Japan</td>
</tr>
<tr>
<td>MAPPER 5 Systems</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>Personal MAPPER Systems</td>
<td>6,500</td>
<td></td>
</tr>
<tr>
<td>UNIX MAPPER Systems</td>
<td>4,300</td>
<td></td>
</tr>
</tbody>
</table>
In 1984 a strategy of micro-MAPPER systems also evolved. A MAPPER 5 system using a Mitsubishi processor was developed and offered as the first micro-MAPPER system.

Then a PC MAPPER system was created which had an extra computer imbedded in a 386 PC to perform MAPPER Report Processing.

This MAPPER software was able to run on either Sperry or IBM PCs and thus became the first offering of MAPPER software on IBM hardware.
By the end of the Sperry era, a powerful array of Report Processing Information Power Tools were created that is unexcelled even in the industry today.

MAPPER Report Processing Information Power Tools
- Abort Process
- Acknowledge Message
- Add Line/s
- Add On Report/Result
- Add Report
- Alpha to Octal
- Data Converter
- Append Data Line/s
- Arithmetic (Formula Solution)
- Auxiliary Printers
- Background Run
- Batch Interface
- Binary Find
- Add new Report
- Alpha to Octal Data Converter
- Append Data Lines
- Arithmetic Algebraic Formula
- Solution Background RUN
- Batch Process Interface
- Binary Find
- Cabinet Switch
- Calculate (Line By Line Logic)
- Calculate & Update Data
- Calendar Generation
- Change Character String
- Display Colors Control
- Horizontal Character Count
- Combine Report Data
- Communications Output Printer
- Compare Report Data
- Count
- Statistical Analysis
- Create File In 1100 Create Help
- And more!

150 Report Processing Information Power Tools + 750 Options

These Report Processing functions can be used by any user without programming. Each function can be turned on or off for each user if needed for security control. The users are limited only by their creative ability and security policies.

Users had an illusion of infinite capability but were coordinated and controlled with effective security and back up techniques.
MAPPER Systems History

- MAPPER Graphics
  - With the availability of graphic and color display terminals and PCs graphic chart functions were created. These could create:
    - Bar Charts  Radar Charts  Block Charts  Scatter Charts  Line Charts  Target Charts  Mixed Bar and Text Charts  Line Charts  Pareto Charts  3D Bar Charts  Time Line Charts  Multiple Chart  Organization Chart  Sign Maker  Graphics  Scaler

[Image of MAPPER software system]
Utilities were also provided to make RUN design very efficient. RUN statement code can be generated from manual function execution with the Iterative utilities.

Besides the user orientation of MAPPER System, the RUN language provided an efficient way to develop powerful, sophisticated applications. Typically, such applications could be developed in one tenth of the time as compared to conventional application development languages, even other 4GL’s.
At the peak of the success of MAPPER marketing shortly after the merger of Sperry with Burroughs to form Unisys, the MAPPER system world looked like this.

### MAPPER Systems History

- MAPPER 1100 Systems 1,500 USA
- MAPPER 1100 Systems 1,000 International
- MAPPER 1100 Systems 500 Japan
- MAPPER 5 Systems 600
- Personal MAPPER Systems 6,500
- UNIX MAPPER Systems 4,300
Other statistics of the MAPPER world.

MAPPER Systems History

The MAPPER World

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered Terminals</td>
<td>935,000</td>
</tr>
<tr>
<td>Registered Users</td>
<td>1,031,000</td>
</tr>
<tr>
<td>RUN Designers</td>
<td>77,000</td>
</tr>
<tr>
<td>Active Applications</td>
<td>1,169,000</td>
</tr>
<tr>
<td>Reports On-Line</td>
<td>71,500,000</td>
</tr>
<tr>
<td>Stored Lines of Data</td>
<td>14 Billion</td>
</tr>
<tr>
<td>Lines Processed Per Day</td>
<td>61 Billion</td>
</tr>
<tr>
<td>Transactions Per Day</td>
<td>2.7 Billion</td>
</tr>
</tbody>
</table>
Other representative groups of customers were:

• Banking - Union Bank of Switzerland, TS Bank

• Insurance - National Life, Kansas City Life, Employees Mutual

• Construction - Bechtel Corp., Sargent & Lundy

• Energy Production - Northern States Power, Kansas City Power & Light

• Recreation - Walt Disney Enterprises, Carnival Cruise Lines

• Military Branches - US Army, Navy, Air Force

+ Many more
The universal appeal of MAPPER Report Processing is reflected in the numerous translations to native languages that were made in the international market. It was translated for use into more than 15 foreign languages including Spanish, German, French even Chinese and Japanese.

The System has been renamed and offered under the name of Business Information System, Unisys BIS.

At its peak under Sperry Corporation, MAPPER systems were installed in a hardware base worth over $3 Billion.
One could speculate; could Sperry have been as successful without MAPPER systems? It is more likely that without MAPPER systems Sperry would have been more like the now insignificant Control Data Corporation with only proprietary hardware and unappealing applications to offer. Thanks to the added value of the over $3 billion MAPPER systems market, Sperry was able to build a $1 billion cash surplus which made it an attractive take over target.
Unisys has no aggressive programs for marketing into these dynamic markets. The Unisys management attitude regarding MAPPER products is truly baffling and very frustrating to the remaining MAPPER customers and worldwide fans who understand what it could be.

There is a saying among MAPPER fans, “There are two kinds of people, those who love MAPPER and those who don’t know enough about it”. Clearly Unisys management still does not have a clear understanding of what MAPPER Report Processing software potential could be.
MAPPER systems offer unique upward compatible power and capabilities.
MAPPER Systems History

MAPPER software has been constantly upgraded to run on all of these state-of-the-art systems:

- Unisys main frame OS 2200 ClearPath series systems
- Microsoft Windows Systems
- Linux
- SUN Solaris
Interfaces are available to create application that integrate the MAPPER system capabilities and database with industry database systems such as:

- ORACLE
- SYBASE
- INFORMIX
- Microsoft SQL Server
- DB2
- Object Database Connectivity (ODBC)
Even today, after a history of 40 years, MAPPER Business Information Systems are still being upgraded and functionally improved.

MAPPER Systems History

- **MAPPER modernization concepts encompass:**
  - A Modern Graphic User Interface (GUI Point & Click) look and feel
  - for control of the interactive Information Power Tools
  - A Modern application development environment.
  - GUI, Unified system and database administration utilities.
  - Tools to aid in modernization of existing applications.
  - Expanding interoperability with other industry software environments.
  - Internet operability and integration.
This book details the complete history of this remarkable product and discusses its current marketing potential. An E Book version is also available. You can Email me for information.